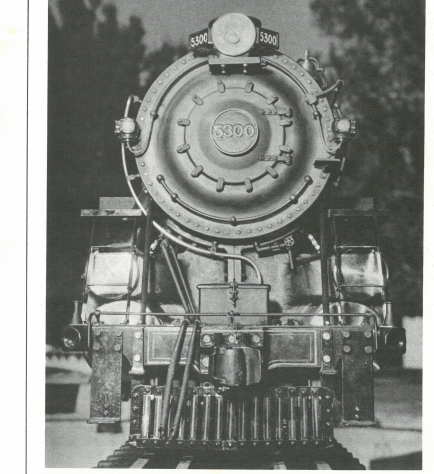
JUNE
1968

45¢

Live Steam®



1" Scale B&O 5300 by Douglas Alkire

Live Steam
magazine

JUNE 1968 VOL. 2 NO. 6

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COVER PHOTO

"We all take a lot of time and try to do a job on our engines, but once in every lifetime someone goes a little bit further with detail and Doug Alkire has to be the master of them all! You have to stand and look for an hour to take in all the detail in this engine." Comment and photo by Gene Hackley.

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Doug Alkire refers to his 1" scale Live Steam Model

"5300" is the number of the *"President Washington,"* first of the famed President Class built by the Baldwin Locomotive Works in 1927 for the Baltimore & Ohio, and the queen of the show at the B&O Centenary Exhibition in 1927. *"5300"* is the only engine of the President Class which still exists today, and it is slated to be refurbished and placed in the B&O Museum in Baltimore as soon as the railroad's finances permit. *"5300"* was a high-speed first class passenger locomotive and was very appealing in appearance.

The one inch scale Live Steam model of *"5300"* shown in the photos was built by Douglas Alkire, a member of the Los Angeles Live Steamers. Doug had absolutely no railroad knowledge or background and would not have had the courage to start such a project were it not for the influence of some of the members of the LALS. Leon Tefft, for example, let Doug run his beautiful one-inch Atlantic around the club track a couple of laps one fine day in mid-1960 and it was "love at first run!" Doug declared that he was going to build one, one way or another. Joe Nelson offered to help with the technical details and furnished the name of Lawrence Sagle who, at that time, was Public Relations Director for the B&O. Mr. Sagle supplied actual railroad drawings which Doug spent many hours redrawing in one inch scale for actual model usage. Gary Kubicek of the LALS loaned some H. J. Coventry prints of the ¾" "President" which Mr. Coventry had on the market.

Doug already had a fairly well equipped hobby shop and was lucky enough to buy a used mill from Gordon Sherwood, a member of Past President of the LALS, to fill out the basic tools needed for building a locomotive. Construction had already started before the mill was purchased and its need was already strongly felt.

3,000 design and drafting hours and 9,700 construction and assembly hours later, on December 3rd, 1967, the locomotive and tender were ready for a display debut at the LALS track in Griffith Park. The boiler test had been passed and all that remained were the actual running tests and debugging exercises.

Boiler construction is of rolled-up sections of butt welded type 321 stainless steel with copper tubes. There are right- and left-side working injectors. The firebox is equipped with a stainless steel arch to promote better combustion of the coal which is used as fuel. The grate sections are all of stainless steel. A smokebox throttle is used as well as a smokebox superheater. A three-cylinder axle pump feeds boiler make-up water through three pre-heaters (the air tanks) which are warmed by exhaust steam. The stainless steel piping is kept under the boiler for this non-prototype hardware. Wrapped piping, both dummy and working, is wrapped with fiberglass tape.

The cylinder block is of welded steel fabrication throughout and is equipped with piston valves. The cylinders have nodular iron liners.

A variety of materials was used: hot and cold rolled steel, 4130 alloy steel, a little brass, cast iron, nodular iron, Meehanite iron, bearing bronze, aluminum bronze, commercial bronze, 321 stainless steel, 304 stainless steel, Inconel X, 1095 carbon steel, silicon steel, aluminum alloy, Teflon, fiberglass, asbestos and leather...not to mention Neoprene "O" rings. The wheels and trailer truck frame are cast iron, couplers are cast bronze. All other structural members and a great number of the detail pieces of miscellaneous hardware are either of welded or hogged-out construction. The 1/12th scale non-skid deck plating used for steps, running boards, cab floor, etc., is acid-etched steel (photo engraved) which was another art in which Doug had no previous knowledge and had to be learned the hard way: by experiment.

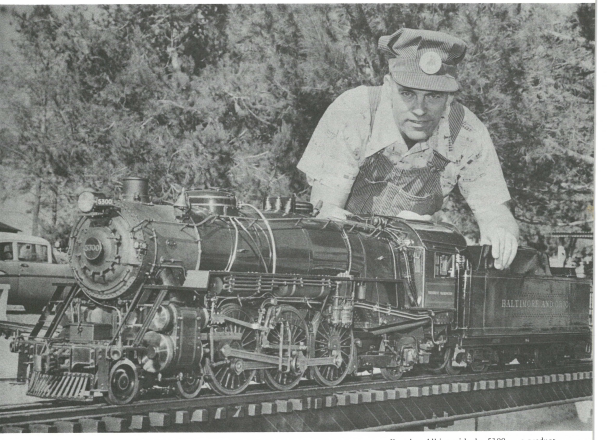
The locomotive is equipped with driver and lead truck brakes which are steam powered. All axles are case hardened steel and run in Torrington needle bearings. There is a working sanding system. The dynamo spins but has not yet been fitted with armature and fields. The air pump is a highly detailed dummy. The actual working whistle is a chime-tone with a four-pipe flat cluster hidden under the cab floor. There is an odometer mounted on the lead truck which records the revolutions of the front lead truck axle.

of the B&O "President Washington" simply as

The 5300

by Gene Hackley

PHOTOS BY THE AUTHOR



Douglas Alkire with the 5300 . . . a product of 12,790 hours of work. Most were enjoyable, some were frustrating, many were educational but all of them worth while in light of years of operation ahead!

The locomotive cab is built up with curved angles framing the .012" tempered steel body. All rivets are real and are holding pieces together. There are no dummy rivets in the cab or tender body strictly for appearance.

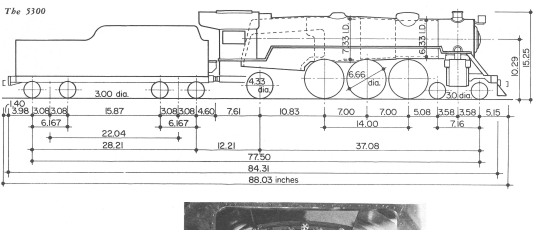
The tender is equipped with a dummy water scoop and working mechanical brakes. The visible tender body is a thin, tempered steel jacket which fits over a heavy stainless steel water storage tank, and is equipped with a water level indicator. Two hand pumps are mounted back to back for double action.

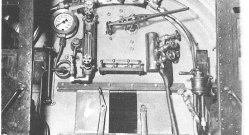
The locomotive and tender are painted in the original 1927 colors – olive green (dark) with gold and red striping. Lettering on the cab and tender is 24 karat gold leaf.

There were times when it seemed that the project would never see completion, but after more than seven years it is finally a reality! Patience was learned along the way and the completion has not been celebrated with any special high-jinks. After all, there is still the matter of running it and working out all of the bugs, if possible. Air operation reveals a little whistle in the stack which could be an air leak past one of the teflon piston valve rings. This might have to be reworked with a switch to lightly loaded cast iron rings . . . and so it goes.

continued

The 5300





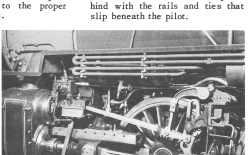
Builder:	I. Douglas Alkire Monterey Park, California
Date:	Started: September 1960 Under Steam: January 13, 1968
Type:	4–6–2 "Pacific"
Scale:	1" = 1'0"
Gauge:	4¾"
Prototype:	SP 5300 (Baldwin 1927)
Cylinders:	Bore: 1.750" Stroke: 2.33" Piston valves Bore: .875"
Valve Gear:	Walschaert
Firebox:	Length: 9.00" Width: 6.75" Grate Area: 60.75 sq. in. Fuel: Coal
Boiler:	Material: Welded type 321 stainless steel Pressure: 140# psi Tubes: 18 – .625" o.d. hard drawn copper, 20" long. Boiler water capacity: 11.33 quarts Usable water, top to bottom of water glass: 5.33 quarts Steyrods: 225 – .187" dia. type 321 stainless steel, welded in place. Superheater: Smokebox type, 8 – .250" dia. copper tubes.
Heating Surface:	Tubes: 706.86 sq. in. Firebox: 193.88 sq. in. Superheater: 50.27 sq. in. Total 951.01 sq. in. Safety Valves: 3
Throttle:	Front end type
Weights in Working Order:	Engine Truck: 51 # #1 Driver Axle: 50 # #2 Driver Axle: 47 # #3 Driver Axle: 47 # Trailing Truck: 42.5# Total Engine: 237.5# Tender: 147.12# Engine & Tender: 384.62#
Indicated Horse Power:	1,561
Tractive Effort:	147,763#
Maximum Drawbar Pull:	43.2#
Tender Capacity:	18 quarts water
Curvature:	Normal Speed: 45 ft. radius Slow Speed: 25 ft. radius
Turntable:	7.5 ft. minimum length
Reverse Gear:	Dummy Alco power gear with operating linkages.
Brakes:	Engine Truck: Steam Engine drivers: Steam Tender: Mechanical
Working Piping:	Type 321 stainless steel thinwall tube.
Tender tank:	Type 321 stainless steel, welded, with anti-slosh baffles.

"Put some water in the boiler And shovel in the coal..."

Imagination becomes a little difficult to control with this view into the cab of the 5300. You can almost feel the non-skid deck plate floor sway under your feet and feel the heat as the firebox door glides open and another scoop of coal is directed to the proper place on the grates.

"Stick your head out the window, Watch the drivers roll."

The action of bright steel valve gear against the blurred background of dark spinning drivers is reward enough for the hours of work that go into its construction. The sound is real...the smell is real...and the troubles of the world drop behind with the rails and ties that slip beneath the pilot.



PART FOUR

THE BOILER: FEATURES AND DESIGN

SO YOU WANT TO BUILD A LIVE STEAM LOCOMOTIVE

by Joseph F. Nelson

CHAPTER 9

BOILER CIRCULATION

Since the firebox dissipates about 85% and the tubes about 15% of the heat into the water, it is natural that the circulation of the water will be in the direction of the firebox along the lower part of the boiler barrel. As the water rises past the hot surfaces, tuming into steam, the remainder of the water flows toward the front of the boiler where it is augmented by incoming feed water, thus maintaining the circulation within the boiler. This circulation poses no major problem with the copper boiler unless muddy water is used. However, a problem does arise with steel boilers where rust is deposited under the fire door which, if not washed out, will build up to where the lower part of the back water leg and the back of the side water legs will be solid rust. Since it is impossible to wash out under the fire door and also impossible to force a strong jet of water around the inside of the water legs, it is recommended that a pipe plug be installed under the fire door and one at each front end of the side water legs so that a water jet may be directed in as follows: 1/8" NPT. for 1" scale engines and 1/4" NPT. for 1½" scale engines. Also, if the cab doesn't interfere, pipe plugs at the rear of the side water legs just above the mud ring would assist in washing out under the fire door and the water legs. Attention to these details will prevent blisters on the inside of the firebox and will extend the steel boiler life.

CORROSION

(Condensed from Corrosion Reporter, INCO, Vol. 2, No. 3)

In modern terms, galvanic corrosion may be defined as the accelerated electrochemical corrosion produced when one metal is in electrical contact with a more noble metal, both being immersed in the same corroding medium which is called an electrolyte. The metal that does not corrode is called the noble metal. During the corrosion process, an electric current is generated by the two metals in contact, and the magnitude of the current is equivalent to the acceleration of the corrosion of the more vulnerable (less noble) material beyond its normal rate. The general reaction is similar to that of a miniature battery from which a finite amount of electrical power is derived. It is well-known that in a wet cell battery, for example, the less noble zinc suffers accelerated corrosion while the copper is virtually unattacked.

It will be noted that some of the metals are grouped together. These group numbers have no strong tendency to produce galvanic corrosion on each other.

The coupling of two metals from different groups and more distant from each other on the list will result in galvanic or accelerated corrosion of the less noble metal. What actually determines the galvanic effect is the quantity of the current rather than the potential difference. It is basically a question of amperes rather than volts.

TABLE 1

GALVANIC SERIES OF METALS AND ALLOYS
(Non-applicable metals omitted)

CORRODED END (anodic, or least noble)
1. Magnesium
2. Zinc
3. Aluminum 2S
4. Aluminum 17 ST
5. Steel, iron, cast iron
6. Lead, tin, lead-tin solder
7. Brasses, bronzes, copper, copper-nickel
8. Silver solder
9. Nickel
10. Chrome iron
11. 18-8 Stainless steel (passive)
12. Silver

PROTECTED END (cathodic, or most noble)

TO MINIMIZE GALVANIC CORROSION

1. Avoid metal combinations where the area of the less noble metal is relatively small. It is good practice to use the more noble metal for small parts in equipment that is built largely of less noble material (copper tubes in steel boilers).

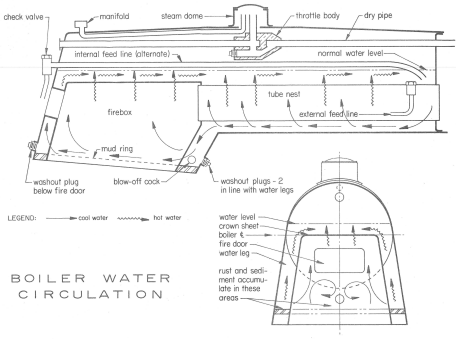
2. Add suitable chemical inhibitors to the corrosive solution (for boilers, keep the boiler water and feed water on the alkaline side. Incidentally, distilled water is on the acid, or corrosive side).

3. Brazed joints are preferred to contact or screwed joints. Use a brazing material (silver solder) more noble than at least one of the metals to be joined.

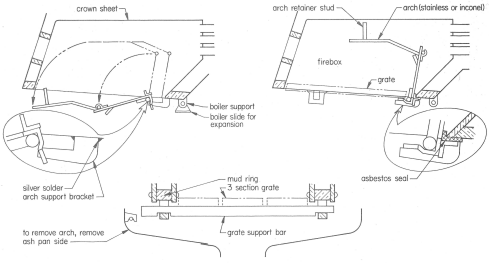
4. Install small pieces of replacement sacrificial zinc or magnesium – cylindrical forms attached to the wash-out plugs immersed in the boiler water. Marine boilers use sacrificial zinc plates bolted to the inside of the boilers.

WET AND DRY METHODS OF STORING STEEL BOILERS BETWEEN RUNNING DAYS

One method of storing Live Steam steel boilers is to fill the boiler with a solution of soluble oil and water. The solution strength is determined by immersing pieces of boiler steel bolted to copper in glass jars filled with different strengths of soluble oil and water solution over a period of a month or more. The solution that shows the least stain with the lowest percentage of soluble oil should be used in the boiler. Automotive radiator or machine shop soluble oil may be used. When the brand of oil is changed, another test for solution strength must be made. It is good practice to wash out the boiler with water after draining the soluble oil; however, the



BOILER WATER CIRCULATION



FIREBOX ARCH INSTALLATION

small amount of soluble oil left in the boiler has shown no bad effects.

Another method is dry storage. Drain the boiler after use while it is still hot, dry it out by pumping air through it and then fill the boiler with dry nitrogen and close all valves.

COPPER TUBES IN STEEL BOILERS

According to the Galvanic Series of Metals, the use of copper tubes in a steel boiler is questionable. However, this writer knows of Live Steam steel boilers with copper tubes that, at this writing, are still in apparently good shape after being in operation 13 years.

BOILER WATER TEST KIT

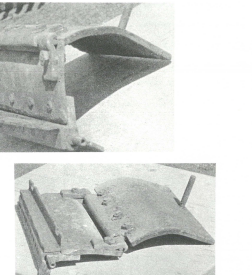
With all the discussion on corrosion of steel boilers, a means of testing boiler water must be presented. The water laboratory will go to great lengths to try and sell a water plan whereby the special type of water that an industrial plant (or Live Steam club for that matter) uses may be scientifically treated to the nth degree. This may be correct for a high-pressure steam plant, but for low pressure steam (100 to 125 PSIG), the problem is not that critical. For practical purposes, there are two basis problems: corrosion and lime scale. Distilled feed water eliminates the lime scale problem, but augments corrosion. However, these problems can be handled in a simple manner by the average locomotive owner.

The simple test that is recommended for the locomotive owner with a steel boiler will indicate the pH value of liquids from 4.5 (acid) to 7.5 (alkali) and is of sufficient range and accuracy for testing boiler water. This test does not test for hardness or salinity. Where distilled water is used, it will have a pH value of 4.5 to 5.0. This is decidedly on the acid side and should be corrected since it is considered corrosive. Addition of sufficient sal soda to the tender water to bring the pH value to about 6.5 to 7.0 would keep the water on the alkaline side and minimize the possibilities of corrosion. It must be realized that the soda fed into the boiler from the tender will not evaporate and will remain in the boiler. This is no problem since the Live Steam locomotive usually runs for a short period and is then blown down. Where a locomotive is kept hot over a period of weeks or months, the boiler water should be drawn off periodically and be tested. If the water is on the acid side, add more soda to the tender. If it is too much on the alkaline side, then ease up on the added soda and use the bottom blow, preferably after the locomotive has set for a while and the boiler water has reached a quiescent state.

A simple litmus paper type test kit may be purchased in local pharmacies and is recommended for owners of steel boilers. It is Nitrazine Paper roll with dispenser and pH value color chart, List No. 5262 manufactured by E. R. Squibb and Sons. It sells for about $1.75. CAUTION! Don't get the idea that if a little sal soda is good, a lot of it would be simply wonderful! Chemistry doesn't work out that way. Overdoing the sal soda procedure over a long period of time could cause cracks and checks in the boiler steel; but if the alkalinity is kept within a pH value of 7.5, no trouble of that sort will be experienced. The above procedure only tests for and neutralizes and acid condition and has no effect on boiler scale. If a boiler scale condition exists due to a high mineral content of the local water supply, a visit should be made to a refrigeration supply house for their best condenser scale remover that can be used inside a locomotive boiler. It will be necessary for him to know the capacity of the boiler in gallons so that advice can be given on the correct proportions to be mixed. This scale remover is an acid compound and should be used in a cold boiler unless instructions are given to the contrary. After this treatment, the boiler should be washed out and the acid neutralized. To be certain, check water draining out of the boiler with Nitrazine Paper against the water that was put into the boiler to make certain that all the acid has been neutralized. There are scale removers intended to remove scale during operation by dissolving them in the feed water. This type of scale remover is not recommended since a scale remover compounded for a refrigeration circulation system might not agree with boiler operating temperatures.

EXPANSION PLATE (BELLY BRACES)

On the prototype locomotive, expansion plates are used to support much of the boiler weight and distribute it over the length of the frame. These expansion plates are relatively flexible and permit boiler expansion without affecting the frame. As functioning items, these expansion plates are not required on the average Live Steam locomotive since both the boiler and the frame are rigid enough to operate without flexing. Due to the length and weight of the 1½" Northern, support in the center of the boiler barrel might be advantageous. Dummy expansion plates that do not quite touch the boiler are recommended for the smaller locomotives for looks; and also, by extending them to the sides, they can become running board supports. (See drawing frame sections for 1" scale P.R.R. K-4, Chapter Six, Part 1.)



The brick arch in the author's 1" scale Pennsy K-4 is shown in its operating position (top) and as extended for removal (lower) from the firebox after the left side of the ash pan is removed. The lip supports the front end of the grate bars (see drawings) and about 1½" is sufficient clearance between the arch and crown sheet for a 1" scale locomotive. The overall length is determined by the tight space available to get the unfolded arch in and out of operating position.

WELCOME, NEW READERS!!

Perhaps you didn't notice it, but when you sat down to read your May issue of LIVE STEAM Magazine there were almost 500 more readers than there were the month before. With all these newcomers to the ranks of Live Steamers, a little background would seem in order.

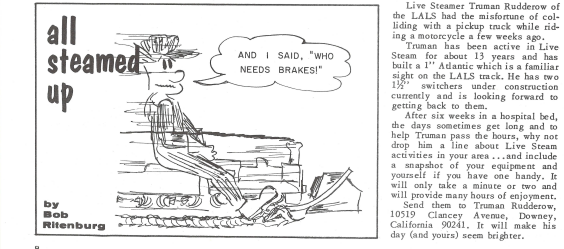
We would first introduce our new readers to the "BLS"...the Brotherhood of Live Steamers...an informal group founded by Carl Purdum back in 1932 to help Live Steamers get acquainted with others with like interests. It has grown over the years to the point where it now has the services of four volunteer secretaries to keep track of Live Steamers in the U.S.A. and Canada. There are no dues or fees and no meetings other than specific club meets designated as BLS Meetings, but the "order of business" is strictly social. BLS Membership is open to anyone who is building, or is seriously considering the construction or purchase, or who has built or owns a Live Steam locomotive, tractor, stationary engine or marine engine. All that is required is that you register with the BLS Secretary. More about that in future issues when we will present a new map of the districts and vignettes of each Secretary.

Live Steam Clubs? Lots of 'em! As a matter of fact there are 50 Live Steam Clubs in the U.S.A. and Canada, which is 19 more than there were 18 months ago....a good indication of how this exciting hobby is growing. If you are interested in joining Live Steamers in their club activities or in attending a meet to get acquainted, check out the "Scheduled Meets" column which is a monthly feature of LIVE STEAM Magazine and see "where the action is." It's best to contact the secretary of the club for information about entry to the club grounds since most of these meets are not open to the general public. Prior arrangements will be well worth while, and not at all difficult.

The BLS Directory (which is now ready for printing) contains a Club Directory and maps showing locations of many of the Club tracks as well as a listing of hundreds of Live Steamers around the country. One word about the use of the Directory: it indicates by "Yes" or "No" if a Live Steamer would like visits from other Live Steamers *by appointment*. A "No" indication should be accepted as exactly that...business requirements, work schedules, health problems or many other reasons can produce the "No" after a name in the Directory. We ask that you respect this designation. The BLS Directory is $2.25 and available from LIVE STEAM Magazine.

A special word is in order to those newcomers who indicated an interest in stationary and marine steam engines. LIVE STEAM Magazine can serve your interests and is anxious to do so except that the main ingredient is missing...material! We have made several contacts and requests for material about stationary and traction models but so far have met with no form of success. If you know of a Live Steamer who can provide this type of information, please have him contact us. We'll take it from there.

We're very glad to have you "aboard," and we'll do our level best to present the Live Steam picture as clearly as possible.



JOHN A. ADAMS of Norwich, Connecticut, passed away very suddenly of a heart attack on March 8th, 1968. He had just returned from a vacation in Florida and his death was discovered by a neighbor the next day.

John had retired after 40 years with Mobile Products and had been building Live Steam engines since 1938.

In 1950 he began attending meets and joined the New England Live Steamers at that time. When the Pioneer Valley Live Steamers organized in 1952, John became a member and contributed much during the ensuing years. He will be missed very much by all Live Steamers.

MILWAUKEE HAS NEWEST LIVE STEAM CLUB

Four Live Steamers met in Milwaukee, Wisconsin, on May 12th and the result was the formation of the *Milwaukee Society of Model Engineers.*

Live Steamers Richard Vogt, Phil Peterson and Hebert Markwardt met at the home of Dr. Jack D. McKenty which provided a well-rounded interest in 1", 3½, 4¾ and 7½" gauges.

The club is planned for all model engineers and the next meeting is planned for July 7th. If you are interested in joining this new group, or just sitting in on a meeting with them, contact Dr. Jack D. McKenty, 4050 N. Prospect, Milwaukee, Wisconsin 53211, phone 414–962-7733.

TRUMAN RUDDEROW RECUPERATING

Live Steamer Truman Rudderow of the LALS had the misfortune of colliding with a pickup truck while riding a motorcycle a few weeks ago.

Truman has been active in Live Steam for about 13 years and has built a 1" Atlantic which is a familiar sight on the LALS track. He has two 1½" switchers under construction currently and is looking forward to getting back to them.

After six weeks in a hospital bed, the days sometimes get long and to help Truman pass the hours, why not drop him a line about Live Steam activities in your area...and include a snapshot of your equipment and yourself if you have one handy. It will only take a minute or two and will provide many hours of enjoyment.

Send them to Truman Rudderow, 10519 Clancey Avenue, Downey, California 90241. It will make his day (and yours) seem brighter.

Scheduled Meets

June

14 NEW JERSEY LIVE STEAMERS
15 Annual Spring Meet
16 3½" – 4¼" – 7½"
Ralph Green, Secy.
Phone 201 – 353-4424
845 Kilsyth Road
Elizabeth, N. J. 07208

15 MICHIGAN STEAM LOCOMOTIVE CLUB
7½" gauge
Harry Partner's track
14550 E. Eleven Mile Road
Warren, Michigan
313 – 771-3292

August

24 GOLDEN GATE LIVE STEAMERS
25 Annual Fall Meet
2½" – 3½" – 4¾" – 7½"
Ron Downey, Secy.
1274 36th Avenue
San Francisco, Calif. 94122

31 PENNSYLVANIA LIVE STEAMERS
1 Annual Fall Meet
2 2½" – 3½" – 4¾"
Frank H. Moore, Jr., Secy.
211 Walnut Avenue
Wayne, Pennsylvania 19087

31 LA PORTE COUNTY HISTORICAL
1 STEAM SOCIETY, INC. AND CHICAGO
2 MODEL ENGINEERING ASSOCIATION
2½" – 24"
Jack Keane, Board Chairman
2940 Mt. Claire Way
Long Beach
Michigan City, Indiana
219 – 872-7405

September

20 NEW JERSEY LIVE STEAMERS
21 Annual Fall Meet
22 3½" – 4¾" – 7½"
Ralph Green, Secy.
Phone 201 – 353-4424
845 Kilsyth Road
Elizabeth, N. J. 07208

October

11 PIONEER VALLEY LIVE STEAMERS
12 Annual Fall Meet
13 3½" – 4¾" – 7½"
Brenton W. Bannfather, Secy.
3 Fleetwood Drive
Sandy Hook, Conn. 06482

Regular Run Days

GOLDEN GATE LIVE STEAMERS
Every Sunday, weather permitting
2½" – 3½" – 4¾" – 7½"
Ron Downer, Secretary
1274 36th Avenue
San Francisco, Calif. 94122

NORTHERN ILLINOIS LIVE STEAMERS BUY LAND

Announcement has just been received that the Northern Illinois Live Steamers have contracted to purchase 7½ acres of gently rolling, partially wooded property complete with a substantial building suitable for a clubhouse. By the time you read this, the transfer of title should be completed and construction begun on the site.

The property, a beautiful site for a club track, is located near Orland Park, Illinois, about 25 miles southwest of Chicago's Loop and convenient to Interstate Routes I-80 and I-55.

The property will be owned and controlled outright by the Northern Illinois Live Steamers (a not-for-profit corporation) and will not have any of the problems associated with renting or otherwise using land owned by an individual or club "angel."

A three track layout (3½, 4¾ and 7½" gauges) will be built complete with the usual steaming bays, loading ramps, etc. A run of at least a mile is planned for the 7½" gauge track with comparable runs in the smaller gauges.

"This will certainly be the finest club layout in the middlewest and soon, we hope, in the country!", says Bill Schreiber, Board Member of the N.I.L.S.

There are already over 50 active members with many completed locomotives and many more under construction.

All those interested are invited to apply for membership now before the necessarily heavy investment in track and other facilities will call for a corresponding increase in the initiation fee. Active and Sustaining Memberships are available for those living close enough to use the facility and for those living at a distance, Affiliate Memberships are available at a modest annual fee. For further information contact Matt Fairlie, President, 3216 West 163rd Street, Markham, Illinois 60426.

MICHIGAN'S BOILER LAW

Upon learning of the adoption of a new boiler law in Michigan, (contained in March LIVE STEAM) your Editor contacted State Senator John F. Toepp from Cadillac and explained its effect on Live Steam Hobbyists. Although the deadline for new bills had passed for this session of the Legislature, Senator Toepp immediately started attorneys working on the matter, intending to prepare for the next session.

He phoned, however, on May 4th to advise that House Bill No. 3673 had reached the floor of the Senate the day before, designed to exempt traction engines from most of the provisions of the new law. Recognizing the similarity between that bill and the problems that the new law posed for Live Steamers, Senator Toepp rose to amend the bill to read as follows:

"Antique and Hobby steam engines as approved by the Director of Labor shall be exempt from the provisions of this act except they shall be inspected annually and an inspection certificate shall be issued for which an inspection fee as prescribed by Act No. 290 of the Public Acts of 1965 shall be paid."

The bill passed the Senate on May 6th by a vote of 27–3, was given immediate effect and sent back to the House for its concurrence on Senator Toepp's amendment. The House, however, sent the bill back to Committee which is scheduled to take up this matter during its session May 27, 28 and 29. Nothing further is available at this writing.

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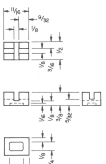
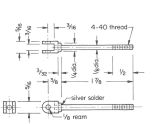
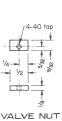
valve gear



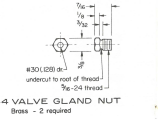
1-1 VALVE
Cast Iron - 2 required



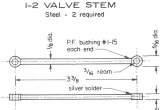
1-2 VALVE STEM
Steel - 2 required



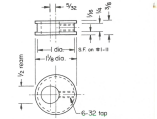
1-3 VALVE NUT
Brass - 2 required



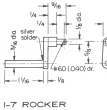
1-4 VALVE GLAND NUT
Brass - 2 required



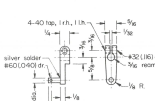
1-5 RADIUS ROD
Steel - 2 required



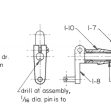
1-6 PUMP ECCENTRIC
Steel - 1 required



1-7 ROCKER
Steel - 2 required

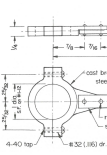


1-8 CRANK
Steel - 2 required



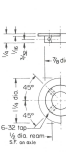
1-9 ROCK SHAFT ASSEMBLY
1 right hand, 1 left hand required

1-10 ROCK SHAFT HOUSING
Steel - 2 required

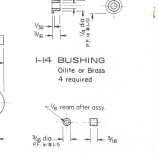


1-11 ECCENTRIC STRAP
2 required - A = 3⅜"
1 required - A = 2⅝"

1-12 VALVE ECCENTRIC
Steel - 2 required



1-13 ECCENTRIC STOP
Steel - 4 required



1-14 BUSHING
Oilite or Brass
4 required

1-15 BUSHING
Oilite or Brass
7 required

building the RARITAN

by William H. Morewood

To begin construction of the RARITAN, the valve gear pieces will offer a chance to start machine work which requires no special instructions.

Cast iron for the valves (1–1) is included in the set of rough castings available for this project as are the cast brass portions of the Eccentric Strape (1–11).

The Pump Eccentric (1–6) will have to slip onto the axle and will then be locked in place with a dog point setscrew projecting into a hole drilled into the axle.

The Valve Eccentrics (1–12) must be a little loose on the axle so that they will turn freely until the cross pin hits the eccentric stop.

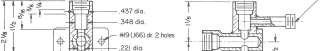
As for the Feed Pump Assembly (2–3), the housing is fabricated from brass components as indicated on the drawings, and all joints are to be silver soldered.

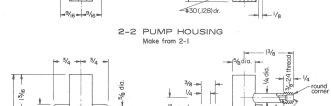
Be sure to bore the seats for the two ball valves as carefully as possible. Drop the bottom ball in place and tap it lightly with a brass rod to seat it and then repeat the procedure for the top ball. Check to see that both seat tight.

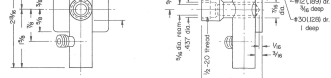
Any good grade of commercial pump packing may be used in the Gland (2–6).

It should be noted that the suction and discharge connections are alike and that these will match the standard compression fittings for 3/16" O.D. tubing.

In the next session we will cover the drive wheels, axles and bearings and the steps necessary to quarter the driving wheels on their axles.







A glimpse of the background and activity at the

Malden Society

by H. E. Brakke

PHOTOS BY THE AUTHOR

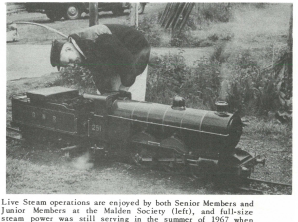
During World War II a HOLIDAYS AT HOME program was developed in London parks to provide relaxation for Londoners faced with severe travel restrictions. Six Live Steamers provided "entertainment" with their equipment and some temporary track in Beverly Park in the Malden District and from that grew the Malden District Society of Model Engineers, Ltd., which now boasts 160 Senior Members, 50 Junior Members and 1 Honorary Member. (The Honorary Member being the author. – Ed.)

In 1945, member Harry Macey offered a small piece of land on which was built a raised permanent track. One member built beams and posts during the day and worked the night shift in a factory . . . when he slept no one knew! The track was completed in nine short months and Public Open Days were inaugurated. Wives sold refreshments which added to the club treasury and the group was able to construct a ground-level 7¼" track.

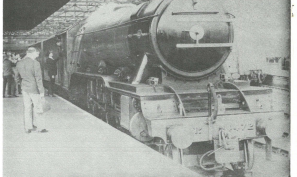
During the intervening years a club house was built entirely by the membership and a new raised track is now being constructed which will replace and exceed the original trackage.

In addition to the 5" gauge 4–4–0 "Maid of Kent" built and operated by the club, the members' roster shows 12 7¼", 20 5" and 48 3½" gauge locomotives . . . a most impressive show of Live Steam in England today.

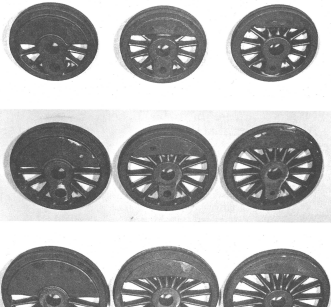
Geoffry Evans, Social Secretary of the Malden Society, watches as his son, Paul, tends the fire on his 3½" gauge 2–6–0 (above.) Tom Snowell (below) steams up his 7¼" gauge 4–4–2, one of the first 1½" engines in the club.



Live Steam operations are enjoyed by both Senior Members and Junior Members at the Malden Society (left), and full-size steam power was still serving in the summer of 1967 when this 4–6–2 pulled the author's train from Liverpool to Harwich. (below)



WINTON OFFERS STANDARD DRIVERS FOR 1½" SCALE



By standardizing on "popular" size drive wheels, Winton Engineering Company simplifies the modeling of a great many prototype locomotives. 56" drivers (top) were found on many 0–6–0, late 2–6–0, 2–8–0, 4–6–0, 2–6–6–2 and 2–10–10–2 locomotives. The 63" size (center) would be applicable to some of the late 2–6–0's as well as 2–8–0, 2–10–0, 2–10–4 and late model 4–4–0 and 4–6–0 types...but the broadest range of prototype material with this size driver would be the USRA Light and Heavy 2–8–2's and 2–10–2's which found their way to some 50 different roads during and after World War I. Both the Light and Heavy USRA 4–8–2's were designed with 69" drivers, but wheels of this size would also be used on 2–8–2, 2–8–4, 4–4–0, 4–6–0, a few 4–4–2 and many 4–6–2 engines built from 1910 to 1925. With light, medium and heavy counterbalances there is a very good chance that an accurate drive wheel for many prototype locomotives can be picked from this selection. See the Winton Engineering Company ad on page 15 and order their catalog for further information.

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mail stop

SUPERELEVATION AGAIN!

Would like some opinion on the elevation on the curves for my 7½" gauge track which is an oval with 50' radius at each end connected by two 70' tangents. I have ½" elevation now.

L. L. YATES
BOX 631
FALFURRIAS, TEXAS 78355

BOILER LAWS

I believe R. J. Henry (L.S. 4/68) has come up with the best solution to our growing boiler problem. Might I suggest that we try to form a committee of several of our more experienced Live Steamers to contact the A.S.M.E. to see if we could work out some acceptable standards for steel boilers. I'm sure that none of us want to build a boiler that is not safe as we can build, but also we would like to have a locomotive that can be taken to other meets in other states and have it accepted as operational.

I hope you will see fit to plug this boiler matter as I believe it is our biggest problem at the moment and likely to get bigger if we don't solve it soon.

DONALD P. DAMEIER
BOX 108
LENA, ILLINOIS 61048

Have read and re-read quite a number of times the notice in the March issue of LIVE STEAM regarding Michigan's adoption of the A.S.M.E. code on boilers. I was particularly disturbed over the wording in the third paragraph that stated, "The new law makes it illegal for any individual to build or repair the pressure parts of any boiler shell."

In this respect it is beginning to appear that the Live Steam Hobbiest will have to have a boiler for his particular engine fabricated by one of these certified shops and this, quite obviously, will cost a considerable sum of money, particularly in larger-scale models. The net result, at least from where I view the situation, can only have a retarding effect on this hobby and I, for one, can see myself abandoning because of prohibitive expense.

My boy has begun work on a Stuart #9 mill engine and, as you probably know, the boiler for this rig is a pretty handsome assembly of plumbing. Now just how can a high school boy of modest means hope to pay the price of having a certified shop build the boiler for this engine?

It seems to me that a man possessing the necessary technical skills could build his boiler as long as the vessel withstood the rigors of inspection and hydro-testing.

HAROLD CLARKE
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...from the cupola

Misery loves company, so it is said and that is probably why we noticed an item in the February issue of Model Railroader regarding correspondence. Seems we are not the only publication that can't keep up with its letter writing...but when we noted that Model Railroader's staff includes 135 employees, we must admit we felt somewhat relieved! LIVE STEAM, you may recall, is still produced in its entirety (except for typesetting and offset plate-making) by a staff that you can count on the fingers of one hand—when if two fingers are missing! (To which someone is certain to note that one of them, then, must be all thumbs!)

We can sympathize with the Model Railroader staff because we know the frustration that a stack of unanswered correspondence can cause. We are still working steadily on the pile that started to build up a year ago when the matter of health superceded all else and prompted our move to Cadillac. Every letter received is carefully read and, if a quick reply is possible, it is taken care of between issues of LIVE STEAM. If it is possible to answer several through comments in these columns, they are handled that way.

Our biggest concern in the matter of correspondence is that which pertains to articles submitted. We still do not have a comfortable backlog of material in our files for future issues, and many of those we do have require additional correspondence to get them into shape for publication. Many require photographs or drawings to illustrate. Naturally, submissions requiring least attention are used when we are trying to catch up on our production schedule. Delays such as we experienced in the production of the April and May issues of LIVE STEAM severely cut into our time for correspondence...but even ahead of our first obligation to produce a monthly issue of LIVE STEAM comes the requirement that it at least approach the standards we have set for this operation.

So if your letter or submission has not been acknowledged, please bear with us. Lack of response does not indicate apathy but rather a desire to discuss your subject in more detail than time up to this point has allowed.

–W.C.F.–

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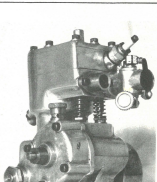

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